

History of Transformation

Combat Studies Institute

THROUGHOUT THE 20th century, the US Army has periodically reviewed the structure and organization of its primary combat unit, the division, to posture itself better to meet changing requirements. Since 1939, the Army has conducted at least 11 such reviews with associated testing and validation exercises, the most recent being the reorganization of the light and heavy divisions in the mid-to-late 1980s. Given the significant changes in the world political environment since the collapse of the Soviet Union and the Warsaw Pact in the early 1990s, another such review is warranted, if not overdue.

In November 1999, US Army Chief of Staff Eric K. Shinseki directed the US Army Training and Doctrine Command (TRADOC) to undertake just such a comprehensive review. In response, the TRADOC commander, General John Abrams, began developing a brigade-sized force capable of rapid deployment, yet with the staying power of the current heavy force. Toward that end, the Combined Arms Center tasked the Combat Studies Institute to analyze past US Army division/brigade restructuring initiatives in an attempt to “determine critical historical insights gained and common themes from previous Army experiments germane to standing up the Prototype [Initial] Brigade.”

Triangular Infantry Division, 1939.

The US Army’s first major review of its divisional structure had its roots during the Spanish American War, when the Army implemented an *ad hoc* triangular divisional organization of three brigades, each composed of three regiments.

This structure endured until World War I, when Army planners observed that trench warfare made tactical maneuver difficult as increased firepower exacted a tremendous toll on attacking formations. The chosen solution was a division large enough to absorb heavy losses and continue combat operations. The Army provisionally organized into square

The ROAD reorganization project was characterized by careful planning, mobilization of planning resources at branch and staff schools at several points, systematic testing and evaluation, and an implementation schedule that was timely but not hasty. ROAD, a variation of the World War II armored division, was the standard division configuration between 1962 and 1983. It was the division with which the Army went to war in Vietnam.

divisions, with two brigades of two regiments each. These larger divisions met the needs of trench warfare in relation to power, endurance, shock action and easy passage through lines.

In the interwar years European armies modernized and discarded older, unwieldy division designs. The US Army recognized that its square division lacked mobility, so it examined several proposals for a triangular division, but the Great Depression overtook events.

In 1936, the Army Chief of Staff General Malin Craig created the Modernization Board to examine the Army’s organization. The board proposed an triangular infantry division design consisting of three combat teams of three regiments each. The 2d Infantry Division, in a first-of-its-kind field experiment, tested the design and validated a smaller, more powerful division with increased firepower, range and mobility.

Planners assumed the new infantry division would be part of a larger force that would provide combat and logistical support, so they reduced the number of organic artillery and auxiliary units and did not assign organic armor. With a minimum of defensive weapons, the division remained a compact offensive unit streamlined for open warfare and reinforced by pooling common support units at corps and army level.

Soldiers operating a field radio during a training exercise, circa 1940.



US Army

During the 1935 test period, the Army grappled with mechanization, aviation, electronics, weapons and tactics to exploit new tools, such as voice radios, close air support, self-propelled artillery, tanks, semiautomatic rifles and light machine guns. The new division benefited from reliable motorized transport; light, reliable voice radios; and new infantry weapons that increased the individual soldier's firepower.

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With the US entry into World War II, the Army rapidly adjusted divisional organization based on combat lessons. Manpower availability, shipping space and the weapon quality influenced division organization with the latter proving most influential. Although the Army tried three additional division designs during the war—light, alpine and motorized—the standard, triangular infantry division proved suitable in all of the Army's combat environments. The basic triangular division continued substantially unchanged from the end of World War II until 1955.

Armored Division, 1940-1943. While the war caused little change in the infantry division's structure, the advent of the tank resulted in the

birth of an entirely new organization. In World War I, the tank functioned almost exclusively in the infantry-support role, although armor advocates suggested that tanks, operating in mass, would someday constitute the arm of decision. Experiments conducted by various nations between the world wars demonstrated that large armored forces were indeed viable. The US Army, too, conducted tests with the Infantry continuing as the proponent. In 1938 the 7th Cavalry Brigade (Mechanized) was activated, but not until May 1940 did the Cavalry's mechanized brigade join up with a brigade of the Infantry's tanks for testing in maneuvers.

The German conquest of France in the spring of 1940 triggered the creation of an American armored arm. The 1st and 2d Armored Divisions were activated out of existing Infantry and Cavalry tank and mechanized formations. Lacking any branch-specific training materials, the new armored formations borrowed and modified training programs. In corps-on-corps maneuvers conducted in the summer of 1941, armored formations, utilizing their high mobility, repeatedly out-manuevered their infantry-heavy opponents and won impressive "victories." During

Twin-turretted M2A2 light tanks cut a swath through a cornfield during Army maneuvers. They are each armed with a 30 caliber machine gun and 37mm main gun.



US Army

During autumn 1941 army-versus-army maneuvers in Louisiana and the Carolinas, antitank elements decimated the attacking armored formations, exposing the armored division's over-reliance on light tanks and its inadequate assets and command structure for combined-arms combat. . . . The key developments precipitating the emergence of the armored division were conceptual, not technological.

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The maneuvers resulted in a new division organization that featured two rather than three armored regimental headquarters, increased the infantry regiment to three battalions and consolidated the artillery battalions under a division artillery headquarters. For tactical control of combat elements, the new division structure included two brigade-level combat command headquarters, to which any mix of combat and support elements could be assigned for specific missions. Shifting its emphasis from mobility to fighting power, the new division doubled the number of medium tank battalions.

The key developments precipitating the emergence of the armored division were conceptual, not technological. However, a host of supporting hardware had to emerge before armored formations could live up to their potential. Reliable motor transport, self-propelled artillery, portable radios and light

liaison aircraft were just a few of the technologies that made the armored division effective.

The armored division first saw battle in Tunisia and suffered a notable defeat in the 1943 battle of Kasserine Pass, but few, if any, observers blamed the division structure for the debacle. A further reorganization in 1943 eliminated all regimental headquarters and increased the number of combat commands to three, producing a leaner, more flexible division. The combat command concept remains a feature of today's Army.

The process of creating and then modifying an American armored division was not undertaken in a vacuum. With war already raging in Europe, the US Army had a wealth of combat data upon which to draw. Elements of both British and German armored doctrine can be seen in the evolution of the US armored force.

Division Reorganization, 1947-1948. After World War II concluded in Europe, the Army analyzed the strategy, tactics and administration of its forces. It recommended retention of only three division types—infantry, armored and airborne—concluding that the standard infantry

division could accomplish diverse missions, making special divisions (light or mountain) unnecessary. Additionally, wartime experience had shown the infantry division's subordinate units strength and

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composition were inadequate for independent, efficient offensive and defensive operations. The absence of tanks in the infantry division's organization was especially problematic. Adding soldiers for communications, intelligence, reconnaissance and administration was proposed, as well as improved weapons for cannon and antitank companies.

Despite the influence of atomic weapons on military thinking, these new divisions reflected the Army's belief that the nature of ground combat remained unchanged. The new infantry division retained much of the structure of the World War II division. Only one division, the 1st Infantry Division in Germany, attained its full table of organization strength before 1950 because of serious shortfalls in equipment, manpower and funding. The strengths of the Army's other nine divisions varied between 55 and 80 percent. Infantry regiments lacked one battalion and the tank company, while artillery battalions had two firing batteries instead of three.

The Army was hollow and its initial defeats in Korea can be traced directly to post-World War II manning and equipment policies. Once fully manned and equipped, the divisional design proved more than adequate.

Pentomic Division, 1955-1963. In 1954, no Army officer would have claimed that the institution had been prepared to conduct ground warfare in Korea. The Korean War had discredited a US defense policy that relied on strategic nuclear weapons to deter conventional military aggression. Additionally, now the Soviet Union possessed their own deliverable nuclear weapons. In response, the Army needed a doctrine and force structure based on the use of tactical nuclear weapons, as opposed to an all-out nuclear exchange.

Structured for a battlefield of greater depth and dispersion, the "Pentomic Division" would have five

relatively self-contained battle groups, each one made up of five companies. Being smaller than a regiment but larger than a battalion, a battle group was supposed to be both agile and strong, the combination necessary to enhance survivability in the face of nuclear explosions.

Ultimately, the Pentomic Division did not have firepower and communication to perform basic warfighting functions. Resource constraints prevented fielding the required artillery support. The technological shortcomings of communications equipment prevented commanders from effectively handling their enlarged span of control. A battle group commander had to coordinate five rifle companies, a mortar battery, a tank company, direct-support artillery and a reconnaissance platoon.

Whatever theoretical merits the Pentomic Division had, it was never made operational or tested in combat. The Eisenhower administration's strategic reliance on the nuclear deterrence provided by the expensive bombers of Strategic Air Command consumed the resources for artillery, communications equipment and airlift capabilities needed to put viable Pentomic Divisions in the field.

ROAD, 1960-1963. To overcome the shortcomings of the Pentomic Division, representatives from the US Army Command and General Staff College and branch schools developed the Reorganization Objective Army Divisions 1965 (ROAD 1965) design. Approved for immediate implementation in May 1961, and delayed by the Cuban Missile Crisis, the 1st Armored and 5th Infantry Divisions were reorganized to the ROAD 65 design and activated in February 1962 with the rest of the Army's divisions following between January 1963 to May 1964.

ROAD divisional organization featured a common support base for infantry, mechanized and armored divisions. This common base included a division headquarters, division artillery, an engineer battalion, an aviation battalion and other support elements. Each ROAD division had three maneuver combat brigade headquarters to which maneuver battalions were attached. In principle, only the mix of maneuver battalion types—infantry, mechanized or tank—differed from division to division. Also, all supply and technical support elements were gathered under one commander for the first time in the division support command, and aviation assets were double those in the old Pentomic Divisions. In combat, the ROAD divisions would be task organized—maneuver battalions and other elements attached as needed to one of the three combat brigade headquar-



An M41 Walker Bulldog light tank and M59 armored personnel carrier of the 2d Armored Cavalry Regiment acting as aggressor forces during an exercise at Fort Meade, Maryland, May 1957.

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ters. Administratively, each battalion reported directly to division headquarters. Brigade headquarters served only to direct maneuver and combat.

ROAD divisions were designed to be versatile, able to operate in all environments—against conventional heavy forces in Europe, or against lighter conventional forces or unconventional/guerrilla threats around the world. The divisions were configured to function in a non-nuclear environment but could convert to nuclear readiness if needed—the opposite approach of the Pentomic Division.

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11th Air Assault Division (TEST), 1963-1965. By the mid-1950s, the Army Aviation School at Fort Rucker, Alabama, was conducting experiments and improvising ways to mount guns and rockets on helicopters and devising ways to use them tactically for a better ratio between manpower and firepower on the potential nuclear (therefore dis-

persed) battlefield. In 1962, the Howze Board advised the Army that drastic force structure changes would be necessary to “accommodate the near revolutionary change in land combat tactics and doctrine” implied by the extensive use of the helicopter.

The 11th Air Assault Division (Test) was formed in February 1963 as a tactical training and experimental test bed at Fort Benning, Georgia. At the same time, the 10th Air Transport Brigade was created around an existing aviation battalion at Fort Benning. Most soldiers had little knowledge of helicopters or their potential. Tactics, techniques and procedures had to be created as the division and test bed grew amid daily changes.

The initial tests evaluated airborne command and control, assault doctrine, formation flying, suppression of hostile fire in landing zones by aerial artillery, air lines of communication and airspace control. The unit’s limitations included poor ground mobility, vulnerability to armored attacks and operational vulnerability to bad weather and extended operations. However, the division’s shortcomings were offset by its excellence in high-tempo operations, long-range capability, flexibility to fight simultaneously in different directions and ability to quickly concentrate forces at critical points.

The 11th Air Assault tested its ideas and equipment in Vietnam. It formed, equipped and trained six airmobile companies to send into combat. Then,



Troops of the 11th Air Assault Division (Test) attack the 82d Airborne Division during the 1964 North Carolina maneuvers.

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the division provided the core for the 1st Cavalry Division (Airmobile) when it was activated in July 1965 and immediately deployed to Vietnam.

As an added benefit, the 11th Air Assault Division (Test) pioneered the methodology used to develop, test and field future Army equipment and force structure. Unfortunately, the bitter interservice rivalry and bickering that characterized the test continued for 20 years.

TRICAP, 1971-1974. Following Vietnam, the Army reoriented on the Soviet threat in Europe and revitalized its North Atlantic Treaty Organization (NATO) connections. Adapting the airmobile concepts honed in Vietnam to fight the numerically superior, heavily mechanized Warsaw Pact forces, the Army developed the triple capability (TRICAP) division concept. The 1st Cavalry Division (TRICAP), activated in May 1971 from elements of the 1st Armored Division and the 1st Cavalry Division (Airmobile), combined an armored brigade (with its fire power, mobility and shock action), an airmobile infantry brigade (to serve as a fixing force with tactical and operational mobility), and an air cavalry combat brigade (for its combination of aerial firepower with tactical and operational mobility) into a single division. Most significant was the air cavalry combat brigade which consisted of one squadron of air cavalry (Vietnam organization) and one

squadron of new air cavalry that would be equipped with attack helicopters featuring tube-launched, optically tracked, wire-guided (TOW) antitank missiles.

Initially, tests did not include major force design issues related to combat forces, but this changed as the project embraced the TRICAP concept. Many believed that TRICAP's triple capability of a division containing armor, airmobile and air cavalry organizations in mid- to high-intensity warfare would demonstrate a revolutionary increase in combat power. They hoped test results would confirm TRICAP as the best combination of combat elements while simultaneously demonstrating its cost-effectiveness as a general-purpose unit.

Tests determined that command, control and communication systems were unable to synchronize combined arms operations involving helicopters, antitank systems, new target-acquisition systems and the new armored and mechanized vehicles. Nor did testing settle conclusively whether the air cavalry combat brigade performed better in a division or as an independent unit. The Army formed the independent 6th Cavalry Brigade for further study.

The evaluation results, coupled with the 1973 Middle East War, convinced the Army that the TRICAP division needed more tanks and less airmobile infantry because it lacked the heavy com-



An Aquila remotely piloted vehicle is launched during testing at Fort Huachuca, Arizona, circa 1976.

The ROAD organization not only used 1970s weaponry inefficiently, it could not keep pace with tactical changes emerging from weapon advances like the antitank missile. To remedy this the Division Restructuring Study would integrate new weapons to ensure their ideal use when and where they were most needed. Weapon systems employment would determine force design.

bat power needed to fight on a NATO battlefield. As a result, the division was reorganized in late 1974 consisting of two armored brigades and an air cavalry brigade.

Division Restructuring Study, 1975-1979. In mid-1976, TRADOC began a formal division restructuring effort to create a force design that took maximum advantage of the new generation of equipment the Army expected to receive in the early 1980s. The ROAD organization not only used 1970s weaponry inefficiently, it could not keep pace with tactical changes emerging from weapon advances like the antitank missile. To remedy this the Division Restructuring Study (DRS) would integrate new weapons to ensure their ideal use when and where they were most needed. Weapon systems employment would determine force design.

Simultaneously, indirect fire techniques and air-delivered munitions greatly increased the demands on battlefield commanders attempting to integrate all combined-arms elements. Greater troop dispersion required greater mobility to mass defenders quickly at a threatened breakthrough point. The increasing complexity of war demanded more combat service and combat service support to supply and maintain the troops and the new weapons, continuing a trend of increasing the size of the Army's logistic tail.

The 1st Cavalry Division, fresh from the TRICAP experiment, again served as the primary test unit. Not unexpectedly, testing—called the Division Restructuring Evaluation—yielded mixed results. Strong support emerged for brigades with organic battalions, integration of combined arms at battalion level and below, single-purpose maneuver units and cross attachment at company level. Yet serious doubts remained: the three-tank platoon was too small, the division depended too much on external combat service support and lacked scouts in maneuver battalions, and the brigade's span of control was too large.

In its final form, the ROAD table of organization and equipment (TOE) updated with 1986 weapons was better and more cost-effective for the offense, but the DRS TOE was better and more cost-effective for the defense. In short, features of both the current and the restructured division warranted inclusion in any new design for a heavy division. However, the desire to field a new force design quickly caused accelerated and nonstandard testing that left many questions unanswered.

Division 86, 1978-1980. To correct these shortcomings, the DRS was replaced with a more detailed approach that would create a force design the same way equipment and doctrine were created, around a vision of the battlefield. Using an approach

A line-up of M109 self-propelled howitzers in reserve during a NATO exercise, Kesan, Turkey, 1982.

Division 86 was so named because 1986 was as far into the future as the Army's senior leadership could project the Soviet threat. . . . In the end, Division 86 was too heavy to deploy and too light to fight heavy forces in open terrain. Attempting to meet both requirements prevented the design from succeeding; however, the design formed the basis for the Army's later search for a viable light division.

that purposely eschewed a branch orientation, later formally called the Concept Based Requirements System (CBRS), Division 86 was so named because 1986 was as far into the future as the Army's senior leadership could project the Soviet threat. Building on DRS, the new design initiative forced doctrine, organization, training and training literature to focus on new weapons and equipment.

The heavy division was designed to have flexibility, mobility, strength and resiliency to withstand and defeat the echeloned attack of Warsaw Pact armies. Superficially, it resembled the ROAD design, consisting of a division headquarters, three brigade headquarters, combat maneuver elements, a division support command, a reconnaissance squadron, division artillery and other support and service support units. However, it differed significantly from ROAD.

A fourth brigade-sized headquarters and an air cavalry attack brigade (ACAB) united all divisional aviation. Tank battalions were organized with four tank companies of three platoons. Mechanized battalions had a TOW antitank company and four com-

panies of three platoons each. Division artillery had increased firepower: three 155-mm battalions, one battalion of eight-inch howitzers, and nine general-support multiple launch rocket system vehicles. The Division Support Command (DISCOM) placed critical battlefield support functions in three battalions to provide direct support to maneuver brigades.

Division 86 used more than 40 major weapons or new pieces of equipment that had not been procured yet. Some were still in the developmental stages. The solution proposed by Department of the Army was to adopt the concept but continue with interim organizations using obsolete equipment until the new materiel became available. Additionally, the Army faced personnel shortfalls in fielding Division 86. Because of these problems, modernizing the heavy divisions was delayed for 10 years. In the end, Division 86 was too heavy to deploy and too light to fight heavy forces in open terrain. Attempting to meet both requirements prevented the design from succeeding; however, the design formed the basis for the Army's later search for a viable light division.



TRANSFORMATION

Fast attack vehicles (FAVs) developed in the HTDL were later employed to great effect by Special Forces during the Gulf War. Three-man FAVs are agile, heavily armed and operate at speeds up to 80 mph, but the dart board taped to the front of the vehicle at opposite bottom, offers a not-so-subtle comment by its crew on their vulnerability to Iraqi fire if employed improperly.



The HTLD was driven by concept rather than technology, a departure from previous Army efforts. To test organizational and operational concepts, the division used surrogate equipment until private industry could provide for its needs. Testing and adjustments continued in an effort to build a unit capable of being airlifted anywhere in the world and prepared to fight enemy armored forces with mobility and agility. . . . The test community opposed the 9th Infantry Division's test methodology from the beginning because it tested equipment, not concepts.

High Technology Test Bed, 1980-1988. While commanding the 3rd Infantry Division in Germany during the mid-1970s, General Edward C. Meyer became convinced that light infantry was necessary to fight in forested and urban areas. He believed the nation was faced with the possibility that it might need to go to war and the Army would not be able to get there. The Army needed powerful, mobile units that could deploy rapidly, then fight and win.

In June 1980, General Meyer, now the Army Chief of Staff, established a High Technology Test Bed (HTTB) to build a force capable of deploying to Southwest Asia on C-141 aircraft (C-5s were explicitly excluded). He sought high technology to reduce the need for a division's heavy equipment.

The test bed departed from usual Army practice by having the experimenting unit—the 9th Infantry Division—design, test and field itself, receiving support only from those developing concepts, materiel and training. The High Technology Light Division (HTLD) was driven by concept rather than technology, unlike previous efforts. To test organizational and operational concepts, the division used surrogate equipment until industry could catch up. Testing and adjustments continued in an effort to build a unit capable of being airlifted anywhere in the world and prepared to fight enemy armored forces with mobility and agility.

The emphasis on testing the HTLD shifted when General Meyer's successor as Chief of Staff, General John A. Wickham Jr., directed the organization of a light division in the Army of Excellence and the redesignation of the 9th Infantry Division as the High Technology Motorized Division to avoid confusion. As redesigned, the motorized division contained three maneuver brigades of nine maneuver battalions—five heavy combined arms battalions, two light combined arms battalions and two light attack battalions—and an air attack cavalry brigade designed and employed as a fourth maneuver brigade.

The test community opposed the 9th Infantry Division's test methodology from the beginning because it tested equipment, not concepts, even when equipment was not available. The Army was able only to field prototypes of some equipment, hamstringing the division's development. In addition, there were no supporting doctrine, TOEs, leader development programs or Army Training and Evaluation Programs (ARTEPs) for a motorized division. Most significant, the division could not fulfill its assigned roles—it was hollow in fact, if not on paper. Many believed the division, as it existed in 1983-86, was too heavy to be deployed as a light division and too light to successfully engage heavy forces of the Soviet Union, the major threat. Lacking Army-wide consensus after General Meyer's retirement, the HTTB did not survive.

7th Infantry Division (Light), 1983-1986. By 1983, despite the work being done in the 9th Division, force structure concerns persisted. With threats ranging from mid- to high-intensity combat with the Soviet Union to contingency op-

A review of Army reorganizations reveals several truisms. Reorganization imposed from above, in the absence of Army-wide support, will fail. Turf battles among agencies and contests between progressive and conservative factions are destructive and enduring. The most successful reorganizations involve consensus building and co-opting of senior leadership early in the reorganization process.

erations to terrorism, the Army recognized that it took long to get to potential battlefields because of air- and sea-lift shortfalls and high unit deployment profiles. European-based heavy divisions oriented on the Soviet threat, but the Army had no division to perform contingency missions on short notice. In June 1983, General Wickham ordered TRADOC to design a light infantry division (LID) deployable in 500 C-141 sorties, and in February 1984, the 7th Infantry Division at Fort Ord, California, reorganized as a light infantry division.

A LID General Officer Steering Committee was established to review and monitor progress ensuring that attention remained focused on the unit. Branch schools and centers participated in the design effort and prepared leader development and unit training materials, further contributing to an Army-wide commitment to the new division's success.

The LID proceeded quickly from idea to fielded unit. The division was given only enough support systems to operate in a low-intensity environment for 48 hours without external support. Designers reduced logistics, fire support, antitank and survivability assets. Whenever possible, they replaced organic capabilities with cadre personnel organized to accept corps augmentation quickly. The final design was an extremely lean, foot-mobile division.

The 7th Infantry Division gave the Army a viable force while expanding its operational possibilities. It deployed to Panama during Operation *Just Cause* and to Saudi Arabia-Kuwait for the Operation *Desert Shield* and *Desert Storm*. However, some criticized the division as being too light to face heavy forces, and others argued that it lacked tactical mobility, while still others said it emphasized combat power at support units' expense.

The design and fielding of the LID succeeded largely because General Wickham built a consen-

sus by involving many agencies in the process. He established as the "architect of the future" and charged it to design the unit and then market it to an Army concerned about hollowness and deployability. The Combined Arms Center served as the honest broker for the branch proponents in establishing a workable and acceptable force structure. In the end, the Army gained a credible contingency capability.

Force XXI / EXFOR / Experimental Division, 1993-1997. After the victory in the Gulf War and the collapse of the Soviet empire, emerging threats and the diverse missions to which ground forces were committed combined with the extraordinary growth of information technology to create a different world for the post-Cold War Army. These factors compelled the Army to reexamine its doctrine and force design.

In January 1993, Army Chief of Staff General Gordon R. Sullivan endorsed the concept of digitizing the divisions—linking combat elements with sophisticated computers, enabling units to share situational awareness, and allowing commanders to make rapid, accurate tactical decisions. General Sullivan formally initiated Force XXI, a term describing this redesign process, in March 1994, with the effort centered on redesigning the heavy division.

One of the Experimental Force's (EXFOR) most difficult tasks was synchronizing the force modernization plan, the applique (a prototype set of hardware and software providing common computer links in a combat brigade) plan, the training plan and the experimental plan. The precise sequencing and two-year compressed schedule left little room for missteps.

For the first seven months of 1996, the 4th Infantry Division's 1st Brigade was transformed and manipulated by various experts, specialists, contractors and consultants to build fundamental tactical skills and integrate the immature tactical internet (TI) into combat training operations. The unit had to master combat fundamentals and digital equipment simultaneously while training for the Advanced War-fighting Exercise (AWE) at the National Training Center (NTC), Fort Irwin California, a difficult challenge considering that three-quarters of the brigade's platoon leaders and sergeants were new to their positions.

The equipment's potential was obvious, but the new technology's immaturity affected all areas. However, even lackluster TI performance provided more concrete facts than leaders had previously imagined receiving. Additionally, waiting for fully functioning digitization before proceeding with the experiment would have meant an unacceptable delay.

The AWE's qualified success does not detract from its achievements. Without a highly visible,



A scale model of a tilt-rotor aircraft, built for the Army by the Vertol Aircraft Corp, awaits wind tunnel testing at a NASA facility, 1959.

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large-scale experiment, a TI—however fragile and immature—would not have been created in 1996. If the experiment had not proceeded, debate about digitization's effectiveness and its impact would have remained in the abstract. The analytical models supporting Force XXI and digitization were improved because of the test. Most significantly, the EXFOR affected the Army's culture by changing the terms of the digitization debate. Almost every part of the experiment challenged principles of Cold War Army culture. Experimentation did not answer all the questions, but it showed the practicality of many of the ideas.

On 12 separate occasions over the past 60 years, the Army studied its division structure with a view toward reorganization. Objectives, methods and degrees of success varied, but some common threads can be discerned. Each of the reorganizations addressed a specific need—to meet a specific threat, to utilize or accommodate new technology or to accommodate austerity in one or more areas.

These studies suggest that designing a force to meet a specific opponent on a known battlefield proved to be the surest path to success. The ROAD and Division 86 initiatives confronted fewer unknowns and enjoyed a wider level of acceptance within the Army than did other reorganizations.

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are inherently more speculative in nature regarding enemy and theater and are likely to lie outside of the Army's institutional "comfort zone."

Reorganizations that are intended to address austerity, be it shrinking manpower pools or lack of strategic transport, run the grave risk of creating a structure that is deployable but not "fightable." Since 1943, for example, the problems of inadequate combat power and sustainability have plagued every effort to design a light division, even when the reorganization procedures themselves went smoothly.

In testing a new organizational concept, it is essential that the concept and not the inherent fitness of the test unit functions as the factor that determines the test outcome. These case studies suggest that it is best to utilize an existing formation that is already proficient in fundamental skills. The smooth conversion of the 7th Infantry Division from heavy to light is an example.

If a new formation is to be assembled for test purposes, extra time should be allowed for the test unit to train. The 11th Air Assault Division and the EXFOR both provide examples of the difficulties that can be encountered if training time is not provided. The World War II armored division and the ROAD reorganizations allowed for systematic, progressive training.

Controlling the number of variables that may influence the outcome is an essential aspect of a

successful test program. Although a hastily created formation, the 11th Air Assault Division carefully controlled maneuvers to address specific issues. On the other hand, the World War II armored division and the HTTB used surrogate equipment and experimental doctrine, obscuring test outcomes and lessons.

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gram, the HTTB again serves as a negative example. The test unit formulated and conducted its own test program, leading inevitably to questions of credibility. In contrast, EXFOR used established test agencies, such as the NTC, lending instant credibility to the outcome.

Testing new organizational concepts produced varied results. The Pentomic Division test indicated a need for major modifications. Its numerous deficiencies were never adequately addressed and, ultimately, the concept failed. By contrast, the 11th Air Assault Division survived, despite the fact that its deficiencies could not be corrected immediately. EXFOR typifies a third possible outcome. Although test results were unimpressive, Army leaders recognized that the technology was still in its infancy and held great promise for the future.

Rarely, if ever, has the Army been able to resource fully a new organizational concept. Every case study except one resulted in an appeal for more assets in the reorganized unit. In times of Army growth, not surprisingly, the new requirements were met (ROAD). More commonly, the introduction of new assets was incremental and prolonged, as in the case of Division 86. All too often, the Army proceeded with reorganization expecting units to do more with less. TRICAP suffered a different fate—the post-Vietnam drawdown led to the abandonment

of the reorganization and the elimination of the test unit. History suggests a cautionary note: attempts to streamline and lighten the division usually involve the shifting assets to other echelons and create a division that needs to be reinforced to fight effectively.

Technology influenced reorganization by pushing the process forward or by creating a demand. The Pentomic Division was a hastily conceived initiative pushed by new technology (atomic weaponry) but without a clear doctrine for its battlefield employment. EXFOR was also pushed by technology, but in this case the Army refrained from embarking upon wholesale immediate reorganization because the technology itself was still evolving. The advent of airmobility illustrates both points. New technology triggered the process and then the 11th Air Assault Division experiment spelled out the need for new technology and provided a sound basis for its eventual acquisition. The triangular division, the World War II armored division, and the Division 86 reorganizations were founded upon a clearly perceived doctrine that induced the development and acquisition of new technology. Additionally, these examples demonstrate that technologically induced change is usually incremental, not revolutionary.

While reorganization temporarily reduced a formation's readiness, less obvious was the impact upon the Army's overall readiness when a unit was designated as a test unit. Reorganization and deployability are incompatible. This is particularly true for a test formation, such as the 1st Cavalry Division, which struggled to stay deployable throughout the TRICAP test. The worst-case example in this regard is the Pentomic Division, which may well have been nonviable, even after its adoption.

In every case, the US Army had time to test and modify division structures before committing them to combat. In World War II, the time elapsed between the outbreak of hostilities and the deployment of US units allowed the Army to shape the development of doctrine and force structure based on others' experiences. Similarly, lessons learned from the ongoing Vietnam conflict helped guide the 11th Air Assault Division initiative.

No American division ever blatantly failed in combat, but all underwent structural modifications after commitment to battle. These modifications generally involved adding rather than removing assets suggesting that designers tend to underestimate the demands of combat.

A review of Army reorganizations reveals several truisms. Reorganization imposed from above, in the absence of Army-wide support, will fail. Turf battles among agencies and contests between pro-



An air-transportable, nuclear-capable Lance missile being manhandled into firing position at a field training exercise, September 1981.

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gressive and conservative factions are destructive and enduring. The most successful reorganizations involve consensus building and co-opting of senior leadership early in the reorganization process. The Army benefits from the existence of permanent testing agencies and facilities, as opposed to reinventing the wheel with each reorganization. And, lastly, battle punishes divisions that are too austere.

The HTTB, initiated by one Army Chief of Staff who chose not to work through established channels, never won acceptance in the Army at large. When that chief retired, there was no proponent to continue the effort.

Questions over proponenty can escalate into institutionally divisive turf battles. The development of an armored division languished for a decade because no combat arm claimed proponenty. The 11th Air Assault Division experiment, as part of a larger debate over airmobility, divided the Army into warring camps. While such contention may at times be the inevitable price of progress, clearly institutional feuds hurt the Army.

An excellent example of consensus building is that of the 7th Infantry Division's transition to light

configuration. Another is the ROAD. In both, the Army as a whole recognized the need for change, and many agencies participated in the conceptualization and testing processes.

Finally, every reorganization initiative since 1975 met with success, with one exception—the HTTB, the one initiative undertaken outside of the framework for creating doctrine that was established after the Vietnam War. TRADOC, the NTC and other existing agencies all have obvious and important roles to play in future reorganization efforts.

Three recommendations can be derived from this historical examination of Army reorganization efforts. First, have a clear and valid reason, based upon doctrine and battlefield realities, for reorganizing. Second, give an explicit sense of direction to the testing agency and to the Army at large so that the goal of reorganization is commonly understood. Third, set specific concrete goals for the testing agencies, and assure that the evaluation process is a valid test of the reorganization concept, not a rubber stamp. Following these procedures will help assure that the reorganization process succeeds both institutionally and on the battlefields of the future. **MR**

This article is adapted from Combat Studies Institute (CSI), Fort Leavenworth, Kansas, Report Number 14 published in January 2000. The complete report can be found at CSI's website, http://www-cgsc.army.mil/csi/PROJECTS/BCT_Concept_Paper.doc. Lewis Bernstein from the Combined Arms Center History Office and Christopher R. Gabel spent many hours researching and writing chapters and making sense of the insights garnered from CSI's research. Thomas M. Huber and Michael D. Pearlman also wrote chapters. Donald L. Gilmore edited the report. William G. Robertson, the project manager, and CSI Executive Officer Lieutenant Colonel Steve Clay put the team together and guided the process.